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5 Method of transforming a digital signal representing a physical quantity, into signals of frequency sub-bands distributed in at least two different frequency bands and in at least two different resolutions,

characterised in that it includes steps of:

- dividing (E1, E18) the signal into first blocks (B_i) all having a same predetermined first number of samples,

10 - transforming (E4) each of the first blocks formed at the previous step into a plurality of second blocks,

any second block under consideration having a second respective number of samples which depends on the resolution of the second block under consideration, and containing samples selected according to their frequency,

15 - grouping second blocks issuing from the transformation of different first blocks in order to form third blocks all having a same predetermined third number of samples which is at least equal to the largest of the second numbers.

20 2. Transformation method according to Claim 1, characterised in that the transformation is a wavelet transformation.

3. Transformation method according to Claim 1 or 2, characterised in that the first blocks (B_i) overlap in pairs on a fourth predetermined number of samples.

25 4. Transformation method according to Claim 1 or 2, characterised in that the first blocks (B_i) are adjacent.

a 5. Transformation method according to ~~any one of Claims 1 to 4~~,⁰²² characterised in that the first blocks are processed in a predetermined order, such that the signal is transformed zone by zone, a zone of the signal being processed at all the resolution levels before passing to a following zone.

a 30 6. Transformation method according to ~~any one of Claims 1 to 5~~,⁰²² characterised in that the grouping of the second blocks is effected by grouping

together second blocks having the same number of samples and samples selected according to the same frequency band.

Method of coding a digital signal representing a physical quantity, into signals of frequency sub-bands distributed in at least two different frequency bands and in at least two different resolutions,

characterised in that it includes steps of:

- dividing the signal into first blocks (B_i) all having a same predetermined first number of samples,

- transforming (E4) each of the first blocks formed at the previous step into a plurality of second blocks,

any second block under consideration having a second respective number of samples which depends on the resolution of the second block under consideration, and containing samples selected according to their frequency,

- grouping second blocks issuing from the transformation of different first blocks in order to form third blocks all having a same predetermined third number of samples which is at least equal to the largest of the second numbers.

8. Coding method according to Claim 7, characterised in that the transformation is a wavelet transformation.

9. Coding method according to Claim 7 or 8, characterised in that the first blocks (B_i) overlap in pairs on a fourth predetermined number of samples.

10. Coding method according to Claim 7 or 8, characterised in that the first blocks (B_i) are adjacent.

11. Coding method according to ~~any one of Claims 7 to 10~~⁰²⁸, characterised in that the first blocks (B_i) are processed in a predetermined order, such that the signal is transformed zone by zone, a zone of the signal being processed at all the resolution levels before passing to a following zone.

12. Coding method according to ~~any one of Claims 7 to 11~~⁰²⁸, characterised in that the grouping of the second blocks is effected by grouping together second blocks having the same number of samples and samples selected according to the same frequency band.

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13. Coding method according to ~~any one of Claims 7 to 12~~,⁰²⁸ characterised in that it includes steps (E9, E11, E13, E15, E18) of quantisation and entropic coding of the transformed signal.

14. Method according to ~~any one of Claims 1 to 13~~,^{2, 7 and 8} characterised in that the digital signal is an image signal.

15. Device for transforming a digital signal representing a physical quantity, into signals of frequency sub-bands distributed according to at least two different frequency bands and according to at least two different resolutions,

characterised in that it has:

- means of dividing the signal into first blocks (B_i) all having a same predetermined first number of samples,

- means of transforming (22, 23) each of the first blocks into a plurality of second blocks,

any second block under consideration having a second respective number of samples which depends on the resolution of the second block under consideration, and containing samples selected according to their frequency,

- means of grouping (25) second blocks issuing from the transformation of different first blocks in order to form third blocks all having a same predetermined third number of samples which is at least equal to the largest of the second numbers.

16. Transformation device according to Claim 15, characterised in that the transformation means are adapted to implement a wavelet transformation.

17. Transformation device according to Claim 15 or 16, characterised in that the division means are adapted to form first blocks which overlap in pairs on a fourth predetermined number of samples.

18. Transformation device according to Claim 15 or 16, characterised in that the division means are adapted to form first blocks which are adjacent.

19. Transformation device according to ~~any one of Claims 15 to 18~~,^{02 16} characterised in that it is adapted to process the first blocks in a predetermined

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order, such that the signal is transformed zone by zone, a zone of the signal being processed at all the resolution levels before passing to a following zone.

20. Transformation device according to ~~any one of Claims 15 to 19~~^{or 16}, characterised in that the grouping means are adapted to group together second blocks having the same number of samples and samples selected according to the same frequency band.

21. Device for coding a digital signal representing a physical quantity, into signals of frequency sub-bands distributed according to at least two different frequency bands and according to at least two different resolutions,

characterised in that it has;

- means of dividing the signal into first blocks (B_i) all having a same predetermined first number of samples,

- means of transforming (22, 23) each of the first blocks formed at the previous step into a plurality of second blocks,

any second block under consideration having a second respective number of samples which depends on the resolution of the second block under consideration, and containing samples selected according to their frequency,

- means of grouping (25) second blocks issuing from the transformation of different first blocks in order to form third blocks all having a same predetermined third number of samples which is at least equal to the largest of the second numbers.

22. Coding device according to Claim 21, characterised in that the transformation means are adapted to implement a wavelet transformation.

23. Coding device according to Claims 21 or 22, characterised in that the division means are adapted to form first blocks which overlap in pairs on a fourth predetermined number of samples.

24. Coding device according to Claim 21 or 22, characterised in that the division means are adapted to form first blocks which are adjacent.

25. Coding device according to ~~any one of Claims 21 to 24~~^{or 22}, characterised in that it is adapted to process the first blocks in a predetermined

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order, such that the signal is transformed zone by zone, a zone of the signal being processed at all the resolution levels before passing to a following zone.

26. Coding device according to ~~any one of Claims 21 to 25~~^{or 21}, characterised in that the grouping means are adapted to group together second blocks having the same number of samples and samples selected according to the same frequency band.

27. Coding device according to ~~any one of Claims 21 to 26~~^{or 21}, characterised in that it has means (26) for the quantisation and entropic coding of the transformed signal.

28. Device according to any one of Claims ~~15 to 27~~^{16, 21, and 22}, characterised in that it is adapted to process a digital signal which is an image signal.

29. Device according to any one of Claims ~~15 to 28~~^{16, 21, and 22}, characterised in that the division, transformation and grouping means are incorporated in:

- a controller (20),
- a read only memory containing a program for coding each of the blocks of data, and
- a random access memory containing registers adapted to record variables modified during the running of said program.

30. Digital apparatus (10) including means of implementing the transformation method according to any one of Claims ~~1 to 14~~^{2, 7, and 8}.

31. Digital apparatus (10) including the device according to any one of Claims ~~15 to 29~~^{16, 21, and 22}.

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